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09/805,692	03/13/2001	Julian A. Fells	678-1192	4489

7590

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EXAMINER
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LI, SHI K

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 01/16/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/805,692

Applicant(s)

FELLS ET AL.

Examiner

Shi K. Li

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-70 is/are pending in the application.
- 4a) Of the above claim(s) 1-43 and 66-70 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 44-65 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 44-65 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 44, 45 and 57 are currently amended with the added phrase "a magnitude of". The Applicant remarks that the magnitude is inherent in the operation of the RF detectors 84 of figure 8. However, neither figure 8 nor the specification discloses the operation of an RF detector, and it is not to the knowledge of the Examiner that an RF detector has an inherent operation to output a magnitude. Claim 47 is currently amended with the added limitation "with a filter having a bandwidth less than an optical bandwidth of the received data modulated signal". The limitation is supported by the specification as originally filed.

***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 44-46, 50-51, 57-59 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita (U.S. Patent Application Pub. 2001/0009467 A1) in view of Dimmick et

al. (T. Dimmick et al., "Optical Dispersion Monitoring Technique Using Double Sideband Subcarriers", IEEE Photonics Technology Letters, Vol. 12, No. 7, July 2000).

Regarding claims 44 and 57, Fujita discloses in FIG. 8 a method of generating an indicative signal of chromatic dispersion. FIG. 8 comprises a fiber 801 for receiving an optical signal, a plurality of filters 810 and 814, a plurality of power detectors 810 and 812, and an identification circuit 811. Fujita teaches in paragraph [0102] that data carried by the optical fiber is in the range of 10 Gb/s, i.e., RF range. The difference between Fujita and the claimed invention is that Fujita does not specify whether the modulated signal has upper and lower sidebands. However, double sideband is the default modulation result and is commonly used. In addition, Dimmick teaches monitoring dispersion using double sideband. The spectrum of a double sideband signal is symmetrical about the carrier as illustrated in FIG. 1 of Dimmick. One of ordinary skill in the art would have been motivated to combine the teaching of Dimmick et al. with Fujita because such symmetry allows the use of the spectrum at the receiving end to determine dispersion during transmission of the data signal. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use double sideband signal, as taught by Dimmick, in the chromatic dispersion method of Fujita because the symmetrical spectrum at the transmitting end allows the use of the spectrum at the receiving end to determine dispersion during transmission of the data signal.

Regarding claims 45-46 and 59, Fujita teaches in FIG. 8 and paragraph [0112] a plurality of filters to sample different frequencies to improve the precision of the dispersion compensation monitor.

Regarding claim 50, Fujita teaches in FIG. 9 a photodiode and filters 814 and 818.

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Regarding claims 51 and 61, Fujita teaches in FIG. 9 an adjustable chromatic dispersion device with the signal from an identification circuit 911.

Regarding claim 58, Fujita teaches in paragraph [0100] a PIN-PD.

5. Claims 44, 47, 49-50, 57-58, 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akiyama et al. (U.S. Patent 6,661,974 B1) in view of Dimmick et al. (T. Dimmick et al., "Optical Dispersion Monitoring Technique Using Double Sideband Subcarriers", IEEE Photonics Technology Letters, Vol. 12, No. 7, July 2000).

Regarding claims 44 and 57, Akiyama et al. discloses in FIG. 60 a transmission system with a wavelength (chromatic) dispersion monitor. FIG. 60 comprises a fiber 30 for conveying optical signal from a transmitting end to a receiving end, photodiodes 43a, 44a and 62a for converting optical signal into electrical signal, bandpass filters 43b, 44b and 62b for selecting a plurality of frequencies and power meters 43d, 44d and 62d for detecting the power at the frequencies and generating a signal to dispersion compensator 45. The difference between Akiyama et al. and the claim invention is that Akiyama et al. does not specify whether the modulated signal has upper and lower sidebands. However, double sideband is the default modulation result and is commonly used. In addition, Dimmick teaches monitoring dispersion using double sideband. The spectrum of a double sideband signal is symmetrical about the carrier as illustrated in FIG. 1 of Dimmick. One of ordinary skill in the art would have been motivated to combine the teaching of Dimmick et al. with Akiyama et al. because such symmetry allows the use of the spectrum at the receiving end to determine dispersion during transmission of the data signal. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use double sideband signal, as taught by Dimmick, in

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the transmission system of Akiyama et al. because the symmetrical spectrum at the transmitting end allows the use of the spectrum at the receiving end to determine dispersion during transmission of the data signal.

Regarding claims 47 and 60, Akiyama et al. includes in FIG. 60 optical filters 41, 42 and 61.

Regarding claim 49, Akiyama et al. teaches in FIG. 60 tapping off a portion of the received signal and deriving the RF signal from the tapped portion.

Regarding claims 50 and 58, Akiyama et al. teaches in FIG. 60 a photodiode 43a and bandpass filter 43b.

6. Claims 44, 49, 51, 53, 57-58, 61, 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eggleton et al. (U.S. Patent 6,370,300 B1) in view of Heismann et al. (F. Heismann et al., "Automatic Compensation of First-Order Polarization Mode Dispersion in a 10 Gb/s Transmission System, ECOC '98, 20-24 September 1998) and Dimmick et al. (T. Dimmick et al., "Optical Dispersion Monitoring Technique Using Double Sideband Subcarriers", IEEE Photonics Technology Letters, Vol. 12, No. 7, July 2000).

Regarding claims 44 and 57, Eggleton et al. discloses in FIG. 11 a scheme for automatically compensating for chromatic dispersion. FIG. 11 teaches the tapping off a portion of an optical signal after a dispersion compensator 33, filtering the signal with optical filter 120, converting the optical signal to electrical signal with O/E converter 121 and analyzing the spectrum with spectrum processor 122. Eggleton et al. refers Heismann et al. for the spectrum analysis scheme. Heismann et al. teaches in FIG. 1 to use RF power detectors to derive a signal indicative of dispersion for controlling a dispersion compensation device. One of ordinary skill

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in the art would have been motivated to combine the teaching of Heismann et al. with the automatic compensating scheme of Eggleton et al. as suggested by Eggleton et al. in col. 9, lines 34-36. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the spectrum analysis circuit of Heismann et al. in the automatic compensating scheme of Eggleton et al. because Eggleton et al. does not provide such scheme and suggests to use the scheme of Heismann et al.

The modified automatic compensating scheme of Eggleton et al. and Heismann et al. still fails to specify whether the modulated signal has upper and lower sidebands. However, double sideband is the default modulation result and is commonly used. In addition, Dimmick teaches monitoring dispersion using double sideband. The spectrum of a double sideband signal is symmetrical about the carrier as illustrated in FIG. 1 of Dimmick. One of ordinary skill in the art would have been motivated to combine the teaching of Dimmick et al. with the modified automatic compensating scheme of Eggleton et al. and Heismann et al. because such symmetry allows the use of the spectrum at the receiving end to determine dispersion during transmission of the data signal. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use double sideband signal, as taught by Dimmick, in the modified automatic compensating scheme of Eggleton et al. and Heismann et al. because the symmetrical spectrum at the transmitting end allows the use of the spectrum at the receiving end to determine dispersion during transmission of the data signal.

Regarding claim 49, Heismann et al. teaches in FIG. 1 tapping off a portion of the received signal and deriving the RF signal from the tapped portion.

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Regarding claims 51 and 61, Eggleton et al. teaches in FIG. 11 an adjustable dispersion compensating grating 33.

Regarding claims 53 and 63, Eggleton et al. teaches in FIG. 11 tapping off a portion of the optical signal after the dispersion compensating grating and deriving the RF signal from the tapped portion.

Regarding claim 58, Heismann et al. teaches in FIG. 1 a high-speed photodiode.

***Allowable Subject Matter***

7. Claims 48, 52, 54-56, 62 and 64-65 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

8. Applicant's arguments with respect to claims 44-51, 53, 57-61 and 63 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Cai et al. (U.S. Patent 6,330,383 B1) discloses in FIG. 11A a feed-forward tunable dispersion compensation scheme with PM-to-AM dispersion detector.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 703 305-4341. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).




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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703 305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-3900.

skl

  
M.R. SEDIGHIAN  
Patent Examiner  
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